

# Long-term management of asthma

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## Basic rule

- Teach the patient self-management (Level of Evidence=A; Evidence Summary available on the EBM Web site).
- The patient's own primary care physician checks the adequacy of the treatment regularly.
  - Minimal symptoms
  - Normal functional ability
  - Little need for inhaled sympatomimetic
  - Little daily variation in the peak expiratory flow (PEF) values (maximum 10 - 20%)
  - No side-effects of drugs
  - Normal pulmonary function at least after inhaled sympatomimetic
- Diagnose sinusitis as a cause of exacerbations

## Principles of long-term management

- Anti-inflammatory drugs (corticosteroids) are an essential part of the treatment.
- Teaching and monitoring the inhalation technique of drugs is important.
- The treatment is tailored individually according to the severity of the disease, and it is changed gradually.
- Self-management of drug dosing is encouraged (written instructions!)

- Short courses of peroral corticosteroids are occasionally needed.
- All asthmatics should avoid exposure to high allergen concentrations (Level of Evidence=D; Evidence Summary available on the EBM Web site) and sensitizing chemicals at work. Aspirin and other NSAIDs (particularly Litalgin®) should be used cautiously, as 10 - 20% of patients with asthma are allergic to these drugs.
- Beta-blockers often exacerbate the symptoms of asthma.
- Smoking ruins everything that has been achieved by asthma care.
- Immunotherapy may help some patients (Level of Evidence=A; Evidence Summary available on the EBM Web site).

## Long-term management

1. The patient has only occasional symptoms, and sleep is not disturbed
  - Sanitary measures (Level of Evidence=D; Evidence Summary available on the EBM Web site) and cessation of smoking
  - Inhaled short-acting sympatomimetic if needed (Level of Evidence=B; Evidence Summary available on the EBM Web site) (salbutamol, terbutalin or fenoterol)
2. If inhaled sympatomimetics are needed several times a week or if sleep is disturbed by asthma, regular anti-inflammatory medication is indicated.
  - Inhaled (Level of Evidence=B; Evidence Summary available on the EBM Web site) corticosteroid (beclometasone, budesonide (Level of Evidence=A; Evidence Summary available on the EBM Web site), or fluticasone (Level of Evidence=A; Evidence Summary available on the EBM Web site)) 100 - 400 µg twice daily
    - The most effective anti-inflammatory medication (Level of Evidence=A; Evidence Summary available on the EBM Web site)
    - Pressurised aerosols should not be used without an inhalation chamber.
  - Inhaled chromoglycate 5 - 20 mg four times daily or nedochromil 4 mg 2 - 4 times daily are alternatives
    - These drugs are usually not as effective as inhaled corticosteroids.
  - A leukotriene antagonist (e.g. zafirlukast 20 mg twice daily (Level of Evidence=A; Evidence Summary available on the EBM Web site) or montelukast 10 mg daily) may be used as an alternative.
  - There is no evidence of an inhaled steroid-sparing effect of antileukotrienes, and insufficient evidence of benefit over doubling the dose of inhaled corticosteroids. Antileukotrienes at high doses (2 - 4 times those recommended) used as add-on therapy to inhaled corticosteroids reduce exacerbations requiring systemic steroids (Level of Evidence=C; Evidence Summary available on the EBM Web site).
3. If the symptoms continue daily, several doses of inhaled sympatomimetic are needed and obstruction is present according to PEF monitoring
  - increase the dose of inhaled corticosteroid (Level of Evidence=A; Evidence Summary available on the EBM Web site) up to as high as 2 mg daily
  - alternatively, add a long-acting inhaled betasympatomimetic drug (salmeterol [Level of Evidence=A; Evidence Summary available on the EBM Web site], formoterol) without omitting the necessary anti-inflammatory medication.
  - check the inhalation techniques.
4. If the symptoms are not adequately controlled with a large dose of inhaled corticosteroid and short-acting sympatomimetic when needed, add one or more of the following:
  - Long-acting inhaled sympatomimetic (salmeterol 50 µg x 2, formoterol 12 - 24 µg x 2) (Level of Evidence=A; Evidence Summary available on the EBM Web site)
  - Slow-release theophylline 400 - 600 mg daily in one or two doses
  - Inhaled anticholinergic drug (ipratropium 80 µg or oxytropium 200 mg four times daily)

- Beta-sympatomimetic in liquid form administered with a nebulizer
  - Chromoglycate or nedochromil
  - A leukotriene antagonist (e.g. zafirlukast [Level of Evidence=A; Evidence Summary available on the EBM Web site], montelukast). Assess the effect of the added drug. If a favorable response is not observed within 3 - 4 weeks the drug should be discontinued.
5. If the symptoms are not adequately controlled with the above-mentioned treatments add
- peroral corticosteroids (prednisolon, methylprednisolon). Use the smallest dose that controls the symptoms.

## Decreasing medication

- When the symptoms alleviate the medication can be tapered gradually.
- If the symptoms are minimal, the need for inhaled bronchodilating medication is small, the PEF values are normal, and there is no diurnal variation, the dose of anti-inflammatory medication can be halved about 6 months after the disease has stabilized. PEF values and diurnal variation should be monitored.
- In chronic asthma it is often not possible to stop all anti-inflammatory medication.

## Other treatments for asthma

### Antihistamins

- Antihistamines have very limited effect in asthma (Level of Evidence=B; Evidence Summary available on the EBM Web site). They can be used to alleviate other symptoms of allergy.

### Antibiotics

- Only clear signs of bacterial infection are an indication for antibiotics.
- Most infections causing exacerbations of asthma are of viral origin. Remember sinusitis, but avoid unnecessary antibiotics.

### Antitussives

- Cough is usually a sign of poor control. Increase the intensity of treatment, or give a short course of oral corticosteroids.

## Oral corticosteroids

### Indications

- Increasing symptoms and decreasing PEF values over consecutive days
- Duration of the effect of inhaled sympatomimetics decreases.
- PEF values are less than 50 - 70% of the patient's best values.
- Sleep is disturbed by asthma.
- Morning symptoms persist until noon.

- Maximal medication without oral corticosteroids fails.
- An acute exacerbation after the patient has received inhaled or intravenous bronchodilating medication (Level of Evidence=A; Evidence Summary available on the EBM Web site).

## Dosage

- Prednisolon is given 30 (- 60) mg daily as long as the symptoms have disappeared and the PEF values have normalized, and no more than 3 days thereafter, usually 30 - 40 mg for 5 - 10 days.
- The drug can be stopped at once without tapering the dose gradually.

## Self-management of asthma

- The patient should have good knowledge of self-management.
- The components of successful self-management are
  - acceptance of asthma and its treatment
  - effective and compliant use of drugs
  - a PEF meter and follow-up sheets at home
  - written instructions for different problems
- As a part of controlled self-management the patient can be given a PEF follow-up sheet with individually determined alarm limits and the following instructions (Level of Evidence=B; Evidence Summary available on the EBM Web site):
  - If the morning PEF values are 85% of the patient's earlier optimal value, the dose of the inhaled corticosteroid should be doubled for two weeks.
  - If the morning PEF values are below 50 - 70% of the optimal value the patient can start a course of prednisolon 40 mg daily for one week and contact the doctor or asthma nurse by telephone.

## Indications for specialist consultation

- The indications for consultation are relative and they depend on the services available and the experience of the patient's primary care doctor in the treatment of asthma.
  - Newly diagnosed patients
  - Suspected cases of occupational asthma
  - Recurrent exacerbations
  - Assessment of working ability
  - Symptoms in spite of a large dose of inhaled corticosteroids
  - Planning of nebulizer use at home,
  - Pregnant women with increased symptoms
  - Asthma interferes with the patient's way of living (e.g. sports activities)

## Follow-up

- Because asthma is a common disease it should be mainly treated and followed up by a general practitioner.
- A patient on medication should meet his own doctor regularly.
- In mild cases one follow-up appointment yearly is sufficient.

- A two-week measuring of PEF values at home is usually sufficient as follow-up examination, eventually complemented by a simple spirometer examination.

## Related evidence

- Antileukotienes alone are less effective than inhaled steroids for improving lung function and quality of life (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- There is not enough evidence to evaluate the benefits of influenza vaccination in patients with asthma (Level of Evidence=D; Evidence Summary available on the EBM Web site).
- Physical training in patients with asthma improves cardiopulmonary fitness but does not change lung function (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- There is limited evidence that breathing exercises may be of some benefit in asthma (Level of Evidence=C; Evidence Summary available on the EBM Web site).
- Methotrexate may have a small steroid sparing effect in adults with asthma who are dependent on oral corticosteroids (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- Use of cyclosporin may reduce the need of oral steroids in asthma but side effects are common (Level of Evidence=C; Evidence Summary available on the EBM Web site).
- Gold may reduce the need of steroids in asthma, but given the side effects and necessity for monitoring the treatment cannot be recommended (Level of Evidence=C; Evidence Summary available on the EBM Web site).
- Use of limited asthma education as it has been practiced does not appear to improve health outcomes (Level of Evidence=C; Evidence Summary available on the EBM Web site).
- There is no overall improvement of asthma following treatment of gastro-oesophageal reflux (Level of Evidence=C; Evidence Summary available on the EBM Web site).
- There is insufficient evidence to assess the benefits of different ways to organise asthma care (Level of Evidence=D; Evidence Summary available on the EBM Web site).
- Inhaled corticosteroids are as effective as a daily dose of 7.5 to 10 mg or prednisolone, probably with fewer adverse effects (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- Inhaled beclomethasone has a small dose-response effect (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- There is no conclusive evidence of differences in relative efficacy between beclomethasone and budesonide, although there is some data to suggest that BUD via Turbohaler is more effective than BDP via either Rotahaler or metered dose device (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- Doses of fluticasone in the range of 100 µg to 1000 µg are more effective than placebo in the treatment of asthma, low doses being almost as effective as high doses in mild-moderate asthma (Level of Evidence=A; Evidence Summary available on the EBM Web site).
- Higher potency compounds such as fluticasone may be more effective, but there is an excess of systemic activity with fluticasone propionate compared with other inhaled corticosteroids when therapeutically effective doses are compared (Level of Evidence=A; Evidence Summary available on the EBM Web site).
- Nedochromil sodium is as effective as cromoglycate for exercise-induced asthma (Level of Evidence=B; Evidence Summary available on the EBM Web site).
- There is insufficient evidence to compare the effectiveness of holding chambers versus nebulisers in chronic asthma (Level of Evidence=D; Evidence Summary available on the EBM Web site). In the single high quality study budesonide in high dose delivered by the particular nebuliser was more effective than budesonide 1600 mcg via a large volume spacer.
- There are no significant differences for any important outcomes between standard CFC

containing pMDI and other devices in the delivery of beta-2 agonist for non-acute asthma (Level of Evidence=A; Evidence Summary available on the EBM Web site).

- In patients under 60 years of age there is no evidence of an effect of inhaled corticosteroids at conventional doses given for two or three years on BMD or vertebral fractures (Level of Evidence=B; Evidence Summary available on the EBM Web site). Higher doses are associated with increased bone turnover, but data on BMD or fractures at these doses are not available.
- There is some evidence that macrolides may be beneficial in some subgroups of asthmatic patients, but further studies are needed (Level of Evidence=D; Evidence Summary available on the EBM Web site).
- There is no evidence to support the use of dehumidification for asthma patients (Level of Evidence=D; Evidence Summary available on the EBM Web site).
- Breathing techniques including slow deep breathing, physiotherapy, respiratory muscle strengthening, and yoga breathing exercises, are not proven to be effective for asthma (Level of Evidence=C; Evidence Summary available on the EBM Web site).

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